CHROMOSOME NUMBER OF *BYBLIS LINIFLORA* SALISB. (BYBLIDACEAE)[1]

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ABSTRACT

Cytological studies of plants from two different sources cultivated at Missouri Botanical Garden, St. Louis and the Royal Botanic Gardens, Kew, suggest that *Byblis liniflora* Salisb. has a gametic chromosome number of $n = 16$ instead of $n = 12$ as reported by Kondo (1973). This previous and apparently erroneous report was cited in recent reviews of angiosperm chromosome numbers by Raven (1975) and Lewis (1980).

The carnivorous plant genus *Byblis* comprises 2 species: *B. gigantea* Lindl., a self-incompatible, moderately woody herb endemic to ephemeral swamps along sandy coastal plains in Western Australia (Morcombe, 1968), and *B. liniflora* Salisb., a smaller, self-compatible herb that is widespread across tropical Australia and that has recently been recorded in southern New Guinea (Steenis, 1968). The first chromosome count for this genus was made by Kress (1970), who reported $2n = 18$ for *B. gigantea*. Later Kondo (1973) reported a different number, $2n = 14$ for this species. In addition he reported $2n = 24$ for *B. liniflora*.

The discrepancy in the reported number for *Byblis gigantea* and the large difference in chromosome numbers between the two closely related species inspired us to reexamine these taxa using plant materials that are available in our respective institutions. We do not have access to plants of *B. gigantea*, but we do have cultivated plants of *B. liniflora* from two different sources. The plants at Missouri Botanical Garden were grown from seeds received from Ms. Patrick Dwyer, St. Michael's Episcopal Church, Killean Park, Albany, New York (MO accession number: 791501). The plants at the Royal Botanic Gardens, Kew, were grown from seeds obtained from the Insectivorous Society of Japan, and the stock originated from Western Australia (K accession number: 437-79-04433). Voucher specimens (*Solomon 5668* and *437-79-04433*) are preserved at MO and K respectively.

Meiotic counts prepared at Missouri Botanical Garden clearly show a haploid chromosome number of $n = 16$ (Fig. 1). Numerous good cells were observed, and meiosis was regular in both diakinesis and metaphase I. Mitotic counts made at the Royal Botanic Gardens yielded a diploid number of $2n = 32$ (Fig. 2). Our results are at variance with those reported by Kondo (1973) who received fixed root tips from plants grown by Mr. Joseph A. Mazrimas, Livermore, California. Initially we suspected the possibility of misidentification of these collections. However, photographs kindly sent by Mr. Mazrimas show that his plants were

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[1] We are grateful to P. H. Raven for communicating with Mr. Joseph A. Mazrimas, locating Kondo's original paper and making valuable comments on the manuscript. We also thank P. Goldblatt and P. P. Lowry for critically reading the manuscript, and Mr. D. Bowling for growing *B. liniflora* in sterile culture at Kew. Permission to cite unpublished work by G. J. Keighery is greatly appreciated.

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ANN. MISSOURI BOT. GARD. 69: 418–419. 1982.

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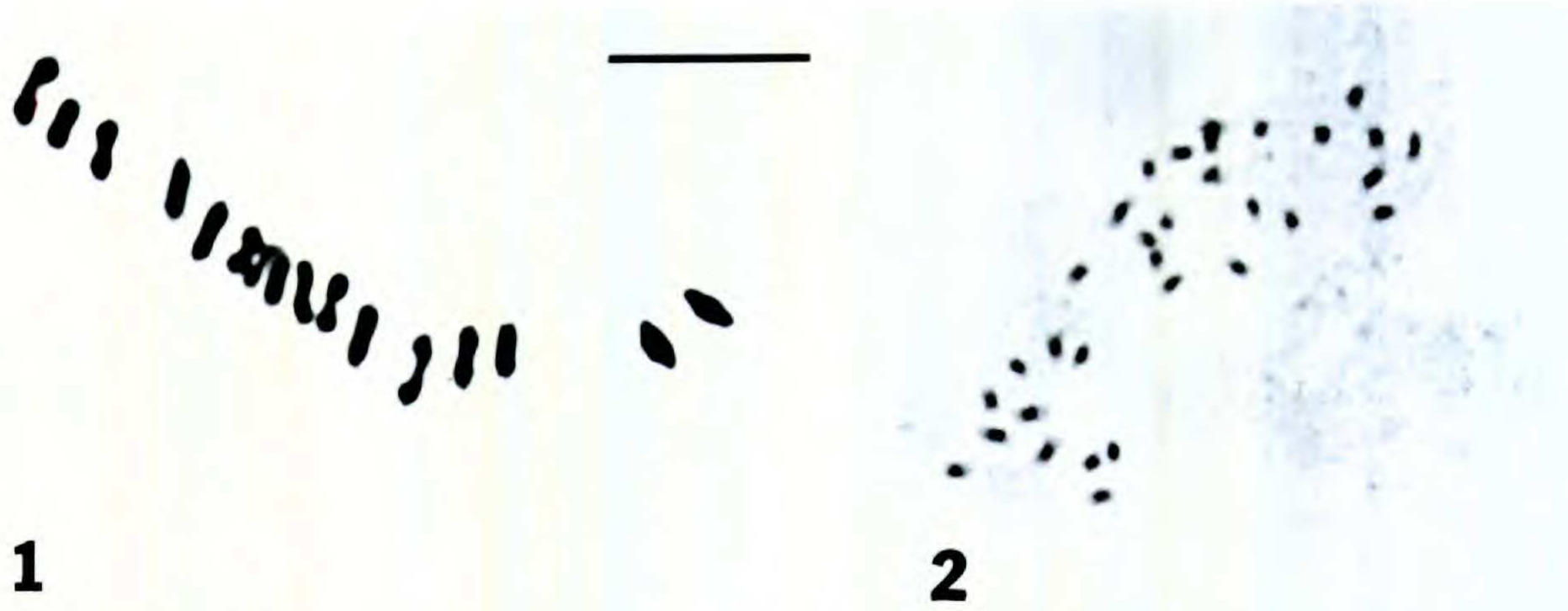

FIGURES 1 & 2. Chromosomes of *Byblis liniflora* Salisb.—1. Meiotic metaphase I, $n = 16$.—2. Mitotic metaphase, $2n = 32$. Calibration bar = 10 μm.

indeed of *B. liniflora* and *B. gigantea*, although the materials are no longer in cultivation nor are seeds still available.

It is of interest to note that $2n = 14$, the chromosome number reported by Kondo (1973) for *B. gigantea*, differs not only from an earlier report by Kress (1970) but also from a recent study by Keighery at Kings Park and Botanic Garden, West Perth, Western Australia (pers. comm.). Keighery traced the source of Kondo's seeds, and plants obtained from this area (Cannington, Australia) gave a count of $2n = 18$. In addition, the 27 plants Keighery examined (obtained from 7 populations sampled over the entire distribution range of *B. gigantea*) consistently exhibited a meiotic number of $n = 9$, an observation which is in agreement with that of Kress (1970).

Therefore, it seems possible that some confusion took place between the time the root tips were fixed and the chromosomes were counted by Kondo. However, it is also likely that Kondo simply misinterpreted his preparations. In our study, we noted that in some mitotic cells chromosomes were prone to aggregate together. This may be due to the fact that ends of the somatic chromosomes are very heterochromatic (Fig. 2), which would tend to cause stickiness. Thus it is likely that some of the "long" chromosomes that Kondo showed in his drawing for *B. liniflora* could actually be aggregates of 2 or 3 chromosomes, thus giving an apparent lower count.

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